This listing of the claims will replace all prior versions and listings of claims in the application:

LISTING OF THE CLAIMS

Claim 1 (currently amended): A modular microchannel apparatus for the chemical analysis of an analyte in a sample, comprising:

(a) a plurality of separation units each effective to carry out a different analytical application of interest and comprised of a first solid substrate having a microchannel present in ~~the~~a surface thereof, wherein the microchannel in each separation unit is of a different length corresponding to the analytical application of interest for the separation unit containing the microchannel and forms a separation column or capillary that separates the analyte from the sample according to the molecular characteristics of the analyte;

(b) a single reservoir unit in the form of a plate comprised of a reservoir that contains a liquid for introduction into each of the microchannels of the separation units in succession; and

(c) an external power source capable of generating an electric field difference between electrically conductive probes extending into the reservoir unit, the power source operatively connected to the reservoir unit for electrokinetically driving the liquid from the reservoir through the microchannels of the separation units,

wherein the reservoir unit has dimensions that enable the operative and modular coupling of the reservoir unit to each separation unit in succession to allow liquid from the reservoir to be electrokinetically driven, by a power-source-generated electric field difference between the probes, into the microchannel of the separation unit that is operatively and modularly coupled to the reservoir unit, and

at least one of the separation units is chip-shaped and further comprised of a second substrate having a surface facing and joining the first substrate surface, thereby forming the microchannel.

Claim 2 (currently amended): An apparatus according to claim 1, wherein ~~at least one of the separation units is chip-shaped~~ the first and second substrates serve as first and second halves, respectively, of the at least one separation unit, and the facing and joining substrate surfaces are substantially planar ~~formed from a first half and a second half each having a substantially planar surface facing and joining the other half, wherein at least one of the planar surfaces has a channel thereon such the joining of the two surfaces forms the microchannel~~.

Claim 3 (previously presented): An apparatus according to claim 1, wherein at least one of the separation units has one or more openings leading to the microchannel capable of admitting liquid reagents such that when the separation unit and the reservoir unit are operatively and modularly coupled, the openings are aligned with the reservoirs thereby allowing the liquid reagents and the analyte to pass from the reservoirs into the microchannel without substantial leakage.

Claim 4 (previously presented): An apparatus according to claim 2, wherein at least one of the separation units includes a substrate comprised of a material other than silicon or silicon dioxide in which the first microchannel is formed by laser ablation.

Claim 5 (previously presented): An apparatus according to claim 2, wherein the reservoir unit includes a membrane that covers at least one of the reservoirs confining the prepackaged liquid reagent therein, wherein the membrane is penetrable with a probe for applying a driving force to drive movement of liquid reagent and analyte from the reservoir through the microchannel of at least one of the separation units.

Claim 6 (previously presented): An apparatus according to claim 2, wherein both substantially planar surfaces of the separation unit having a first half and a second half have a laser-ablated channel thereon and the two channels join to form the microchannel.

Claim 7 (previously presented): An apparatus according to claim 2, wherein the channel of at least one separation unit is formed by laser ablation.

Claim 8 (previously presented): An apparatus according to claim 2, wherein the external power unit comprises a powering plate operatively and modularly coupled to the reservoir unit, the powering plate having an electrical connection to the reservoir to provide a driving force to drive movement of the liquid reagents and analyte from the reservoir through the microchannel.

Claim 9 (canceled).

Claim 10 (previously presented): An apparatus according to claim 26, further comprising a peltier plate operatively and modularly coupled to the support plate for controlling the temperature of at least one of the separation units.

Claim 11 (previously presented): An apparatus according of claim 10, wherein the peltier plate can be used to heat or cool at least one of the separation units by selecting an appropriate mode of operation.

Claim 12 (previously presented): An apparatus according to claim 11, further comprising a heat exchanger operatively connected to the peltier plate to transfer heat between the peltier plate and the surrounding environment.

Claims 13-24 (canceled).

Claim 25 (currently amended): A kit for making a modular microchannel apparatus for the chemical analysis of an analyte in a sample, comprising:

(a) a plurality of separation units each effective to carry out a different analytical application of interest and comprised of a first solid substrate having a microchannel present in ~~the~~ a surface thereof, wherein the microchannel in each separation unit is of a different length corresponding to the analytical application of interest for the separation unit containing the microchannel and forms a separation column or capillary that separates the analyte from the sample according to the molecular characteristics of the analyte;

(b) a single reservoir unit in the form of a plate comprised of a reservoir that contains a liquid for introduction into each of the microchannels of the separation units in succession; and

(c) an external power source capable of generating an electric field difference between electrically conductive probes and having dimensions that enable its modular and operative connection to the reservoir unit for electrokinetically driving the liquid from the reservoir through the microchannels of the separation units,

wherein the reservoir unit has dimensions that enable the operative and modular coupling of the reservoir unit to each separation unit in succession,

the probes extend into the reservoir unit when the reservoir unit is operatively coupled to the external power source, ~~and~~

a power-source-generated electric field difference between the probes electrokinetically drives liquid from the reservoir into the microchannel of the separation unit that is operatively and modularly coupled to the reservoir unit, and

at least one of the separation units is chip-shaped and further comprised of a second substrate having a surface facing and joining the first substrate surface, thereby forming the microchannel.

Claim 26 (previously presented): The apparatus according to claim 2, further comprising a support plate for operatively and modularly coupling to the separation units.

Claim 27 (previously canceled).

Claim 28 (currently amended): A modular microdevice for analyte analysis, comprising:

(a) a plurality of separation units each effective to carry out a different analytical application of interest and comprised of a solid substrate having a microchannel present in ~~the~~ a surface thereof, wherein the microchannel in each separation unit is of a different length corresponding to the analytical application of interest for the separation unit containing the microchannel and forms a separation column or capillary that separates an analyte from a sample according to the molecular characteristics of the analyte;

(b) a single reservoir unit in the form of a plate comprised of a plurality of reservoirs, wherein each reservoir contains a liquid, each liquid is suitable for introduction into a microchannel of a separation unit; and

(c) an external power source capable of generating an electric field difference between electrically conductive probes extending into the reservoir unit, the power source

operatively connected to the reservoir unit for electrokinetically driving liquids from the reservoir unit through the microchannels of the separation units,

wherein the reservoir unit has dimensions that enable the operative and modular coupling of the reservoir unit to each separation unit in succession to allow liquid from at least one of the plurality of reservoirs to be electrokinetically driven, by a power-source-generated electric field difference between the probes, into the microchannel of the separation unit that is operatively and modularly coupled to the reservoir unit, and

at least one of the separation units is chip-shaped and further comprised of a second substrate having a surface facing and joining the first substrate surface, thereby forming the microchannel.

Claim 29 (canceled).

Claim 30 (previously added): The modular microchannel apparatus system of claim 28, wherein each of two separation units of the plurality has a microchannel of a different size.